

NEW QUEENSLAND COCKROACHES OF *MACROCERCA* HANITSCH AND
PERIPLANETA BURMEISTER (BLATTIDAE)

LOUIS M. ROTH

Roth, L.M. 1994 06 01: New Queensland cockroaches of *Macrocerca* Hanitsch and *Periplaneta* Burmeister (Blattidae). *Memoirs of the Queensland Museum* 35(1): 225-233. Brisbane. ISSN 0079-8835.

The New Guinean cockroach genus *Macrocerca* Hanitsch is reported from Australia for the first time. *M. hopensis* sp.nov., *M. shiptona* sp.nov., and *M. shelfordi* Princis occur in northern Queensland. *Periplaneta aboriginea* sp.nov. is described from Cape York Peninsula. □
Blattidae, Macrocerca, Periplaneta, new species, taxonomy, north Queensland.

Louis M. Roth, Museum of Comparative Zoology, Harvard University, Cambridge, MA, 02138, USA; correspondence: P.O. Box 540, Sherborn, MA, 01770, USA; 15 November 1993.

I recently redescribed the 2 known species of *Macrocerca* Hanitsch, described 7 new taxa, and placed the genus in the Blattidae, and new subfamily Macrocercinae. All of the species are found in New Guinea and one also occurs on Key Island. While my revision of the genus (Roth, 1993) was in press, I received a number of specimens of *Macrocerca* from the Australian National Insect Collection (ANIC), Canberra, ACT, and the Queensland Museum (QMBA), Brisbane, Queensland. The material contained 3 species of which one was *M. shelfordi* Princis whose previously unknown female is described below.

The other 2 species are new and are here described.

SYSTEMATICS

KEY TO MALES OF AUSTRALIAN
MACROCERCA

(A key to New Guinea species is given in Roth, 1993)

1. Head whitish with a medial, reddish brown longitudinal stripe surrounded by small dots on the face (Fig. 2A) *shiptona*
Head not as above 2
2. Head black or black with a reddish tinge from the occiput to the clypeus with a large white macula on the upper half of the face between the eyes and antennal sockets (Fig. 3A) *hopensis*
Head with occiput light brown becoming darker on vertex and continuing as a longitudinal dark brown stripe to the clypeus (dark specimens, as in ♀, Fig. 1A); in light

specimens the stripe is variably reduced and may be absent (as in ♀, Fig. 1B, C) *shelfordi*

Macrocerca shelfordi Princis
(Fig. 1)

Macrocerca shelfordi Princis, 1965: 143, fig.6 (♂);
Roth, 1993: 350, fig. 4A-D (♂).

MATERIAL EXAMINED

Queensland, ANIC: Coll. D.C.F. Rentz: 3km ENE of Mt Tozer, nr Iron Range Nat. Park, 12°44'S 143°14'E, 2 ♂♂, 28.vi.-4.vii.1986 (1 collected as nymph, matured 23.xii.1987), 2 ♀♀, Stop 1-3; 9km ENE of Mt Tozer, Iron Range Nat. Park, 12°43'S 143°17'E, rainforest margin, 3 ♀♀, 10.vii.1986, Stop 1-12; 11km ENE of Mt Tozer, nr Iron Range Nat. Park, rainforest margin, 12°44'S 143°18'E, rainforest margin, 1 ♂, 11.vii.1986, Stop 1-20; 13km ENE of Mt Tozer nr Iron Range Nat. Park, low open forest, 12°42'S 143°20'E, 4 ♀♀ (1 carrying an ootheca in the vertical position), 13.vii. 1986, Stop 1-21. Three specimens retained in the MCZ. QMBA: Coll. G.B. Monteith: 3km E of Lockerbie, Cape York, NQ, 1 ♀, 30.i-4.ii.1975; Gordon's mine area, Iron Range, NQ, rainforest, 1 ♂, 12-19.ii.1976; 1 ♀, 12-18.ii.1976; Iron Range, Cape York Pcn., NQ, 1 ♀ (carrying partially complete ootheca), 27-30.iv.1973. The following were collected by G.B. Monteith & D. Cook: Eet Hill Vicinity, Moa (Banks) Is., Torres Strait, NQ, 1 ♀, 9-13.vii.1977; St. Pauls, Moa (Banks) Is., Torres Strait, NQ, 1♀, 14-17.vii.1977; 5km WSW of St. Paul's, Moa (Banks) Is., Torres Strait, NQ, 1 ♂, 16.vii.1977; West Claudie R., Iron Range, NQ, rainforest, 50m, 1 ♀, 3-10.xii.1985.

DESCRIPTION

Female (previously unknown). Head with interocular space less than distance between anten-

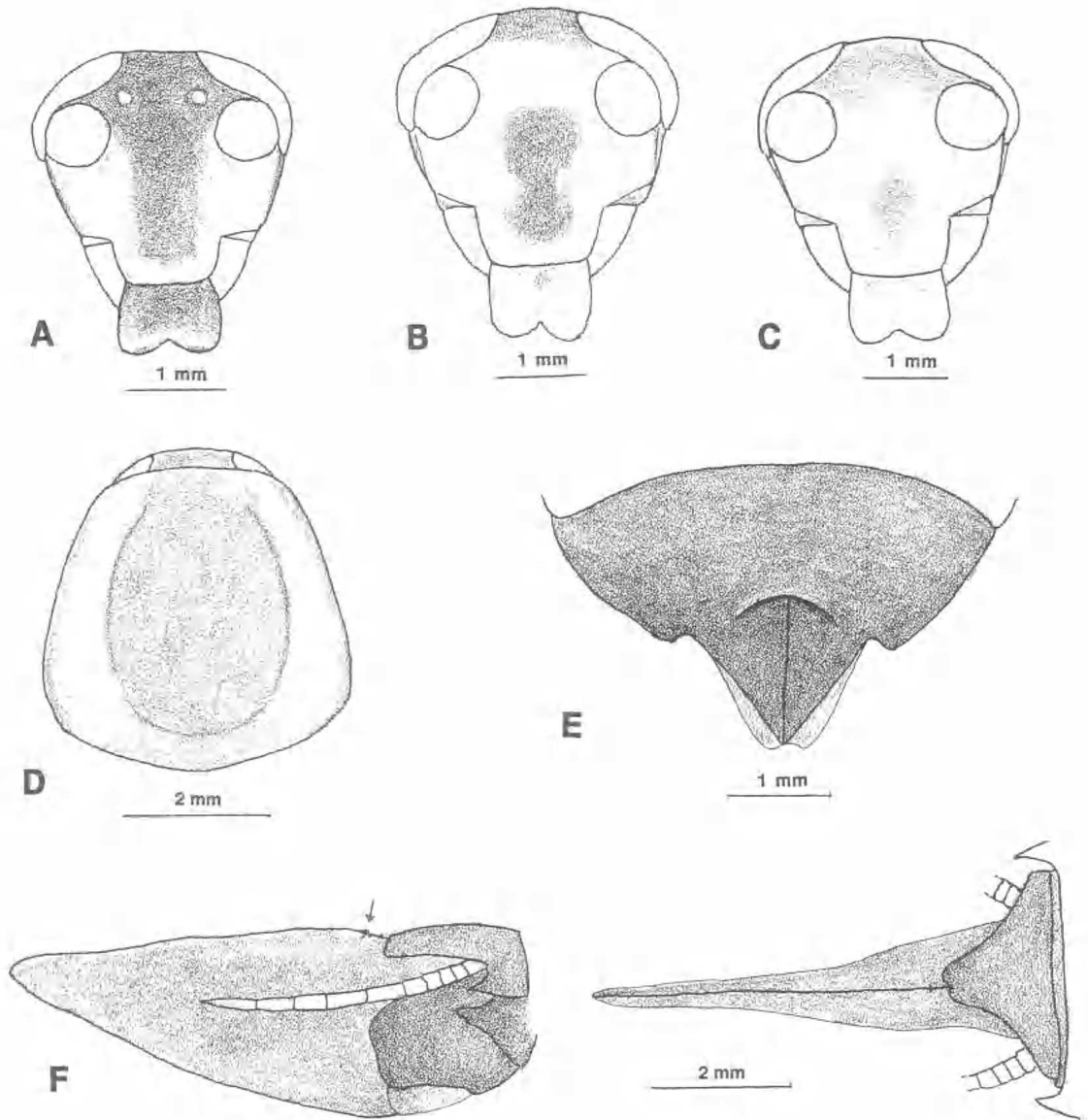


FIG. 1. *Macrocerca shelfordi* Princis, ♀♀ from Queensland. A-C, heads; D, pronotum; E, subgenital plate (ventral; lateral margins of the supraanal plate are visible); F, lateral (left) and dorsal (right) views of an ootheca protruding from the female's vestibulum [arrow indicates a minute serration or tooth (respiratory opening for an egg) in the keel]. Localities: All specimens were collected various distances ENE of Mt Tozer, as follows: A, B, 9 km; C, 3 km; D-F, 13 km.

nal sockets (Fig. 1A-C). Tegmina and wings fully developed extending beyond end of abdomen, the former with longitudinal and oblique discoidal sectors. Hind wing with simple or branched media vein, cubitus with 3 or 4 complete (some with 1 or more branches) and 2 incomplete rami.

Anteroventral margin of front femur without piliform spinules although there may be a few minute, stout, widely spaced spines, with 2 large terminal spines; large pulvilli on 4 proximal tarsomeres, tarsal claws strongly asymmetrical, simple, arolia well developed, as large as the

smallest claw. Abdominal terga unspecialized, supraanal plate subtrigonal, apex shallowly indented (Fig. 1F, right). Subgenital plate with a strongly curved distal division well separated from the lateral margin, forming a pair of contiguous valvular lobes (Fig. 1E).

Colour. Variable. Dark specimens: Occiput light brown becoming darker on the vertex and continuing as a broad longitudinal dark brown band to the clypeus, background color whitish, labrum brown, its distal region whitish (Fig. 1A). Pronotal disk reddish brown without markings, lateral areas hyaline, lateral margins narrowly yellowish (Fig. 1D). Tegmina yellowish brown, hyaline, with the subcostal region and the area of simple costal veins white, radial vein dark brown for a little more than half its length. Hind wing with subcostal and large part of the costal vein region white, distal part of the anterior field yellowish, posterior field practically colourless.

Abdominal terga blackish with a narrow brown stripe mesad on the proximal segments, supraanal plate mostly brown. Abdominal sterna black, or some with irregular lateral maculae laterally and with the subgenital plate or subgenital plate and preceding segment reddish brown. Cerci reddish brown dorsad, darker brown ventrally. Coxae black, femora dark brown, tibiae light brown their outer margins dark brown, tarsomeres light brown with dark ventral margins.

The amount of black is often variably reduced and most specimens are lighter than the above. Dark areas on the head are variably reduced (Fig. 1B,C) and may be absent completely. The lateral borders of the pronotum may be partly or completely white or whitish. The abdomen may have some reddish brown or brown, with some yellowish areas. Cerci and legs may be light brown.

Measurements (δ measurements include those from Roth, 1993; ♀ in parentheses). Length, 16.5-19.5 (16.5-21.0); pronotum length x width, 4.2-4.7 x 4.4-5.0 (4.3-5.4 x 4.2-5.6); tegmen length, 16.7-18.9 (14.7-19.2); interocular width, 0.6-0.8 (0.8-0.9).

Ootheca. The oothecae of the Blattidae (Blattinae and Polyzosteriinae) are remarkably uniform. The eggs are arranged vertically two by two and covered by a thick darkly sclerotized wall with a characteristic serrated keel, each tooth representing the position of a respiratory tubule connecting an egg chamber with the atmosphere (Roth, 1968: figs 5-36). Only one partly formed ootheca, that of *Macrocerca strazanaci* Roth, was previously known (Roth, 1993: fig. 5G). It differs strongly from the oothecae of other blat-

tids. Unfortunately the present 2 oothecae of *Macrocerca shelfordi* also are incompletely formed even though the amount protruding from the abdomen measures 5 mm in the largest specimen. Like that of *strazanaci*, the keel region lacks serrations except for one minute tooth near the apex of the subgenital plate (Fig. 1F, left, arrow). Whether or not the exposed part of the ootheca contains eggs was not determined. It is possible that this exposed region does not contain eggs and that the small tooth may be the region where the first egg is deposited, and the rest of the eggs are deposited (with minute serrations indicating their positions) in that part of the egg case hidden in the female's vestibulum.

REMARKS

This species was previously known only from Key Island.

Macrocerca shiptona sp. nov. (Fig. 2)

MATERIAL EXAMINED

HOLOTYPE: δ , Shiptons Flat, nr Cooktown, Queensland, 15°47'S 145°14'E, 19.x.1980, T.A. Weir & R.A. Barrett, ANIC.

ETYMOLOGY

From Shiptons Flat, the type locality.

DESCRIPTION

Male. Head with interocular space less than distance between antennal sockets (Fig. 2A); antennae filamentous, about twice as long as the body. Pronotum suboval, slightly wider than long (Fig. 2B). Tegmina and wings fully developed extending beyond end of abdomen, the former with longitudinal and oblique discoidal sectors. Hind wing with branched media vein, cubitus vein with 6-8 complete (some of them with 1 or more branches) and 1-3 incomplete rami, apical triangle subobsolete. Anteroventral margin of front femur with very fine setae (but not spinules), terminating in 2 large spines, ventral margins of mid and hind femora with few small, stout, widely spaced spines; 4 proximal tarsomeres with large pulvilli, tarsal claws simple, strongly asymmetrical, arolia well developed, as large as the smallest claw. First abdominal tergum with a dense, longitudinal group of setae, and a pair of large groups on either side of it (Fig. 2D). Lateral corners of abdominal segment 7 acutely produced, the corners of the sixth tergum much less produced (Fig. 2C); supraanal plate

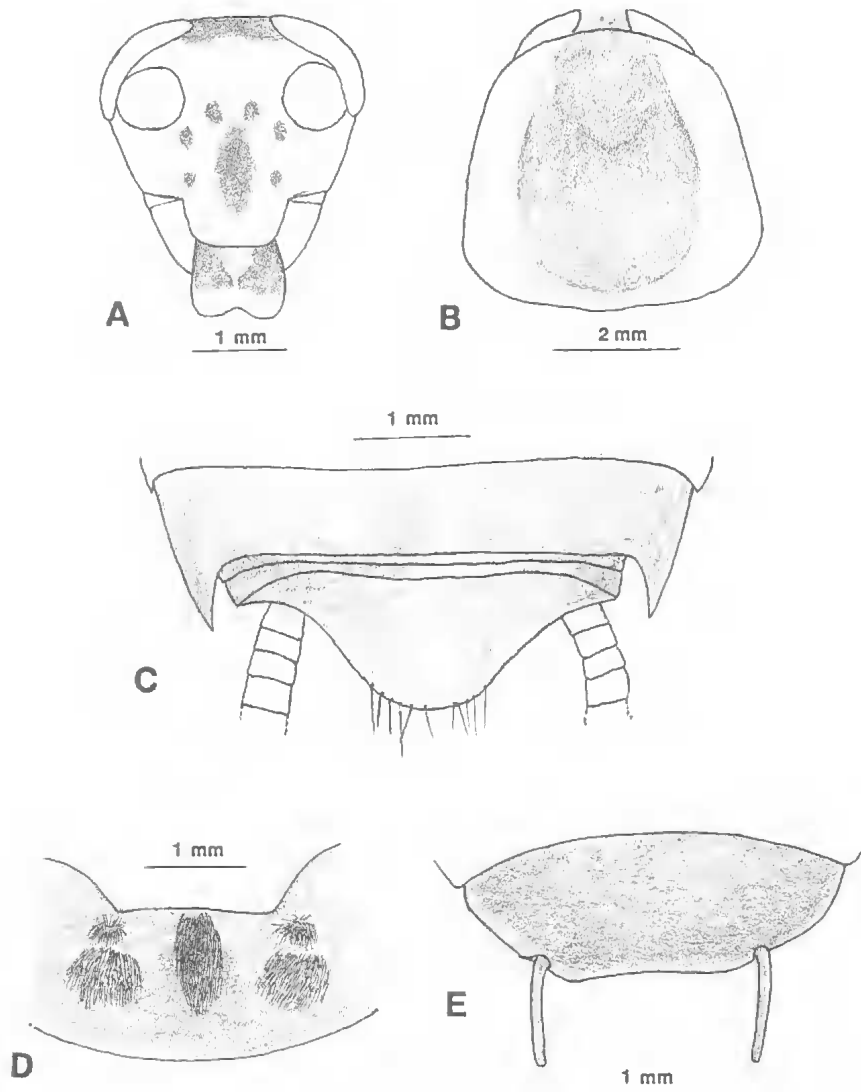


FIG. 2. *Macrocerca shiptona* sp. nov., ♂ holotype. A, head; B, pronotum; C, abdominal terga 7 to 10 (supraanal plate); D, setal modification on first abdominal tergum; E, subgenital plate (ventral).

convexly rounded (Fig. 2C). Subgenital plate weakly asymmetrical, the left lateral margin more convex, styles similar, slender, sclerotized, inter-stylar margin almost straight (Fig. 2E), reaching apex of the supraanal plate. Genitalia completely hidden. Cerci about 4 times longer than the supraanal plate.

Female. Unknown.

Colour. Head with occiput pale yellowish, vertex with a dark brown transverse band, rest of face

whitish (particularly between the eyes) with a mediolongitudinal reddish brown stripe and 6 small, distinct dots of the same colour, labrum reddish brown and whitish (Fig. 2A); maxillary palpomeres pale; antennae brown. Pronotal disk reddish brown, lateral border regions subhyaline with some opaque white areas (Fig. 2B). Tegmina with subcostal and most of the costal vein zones white, remainder uniformly brownish yellow, hyaline. Hind wing with the subcostal area and a

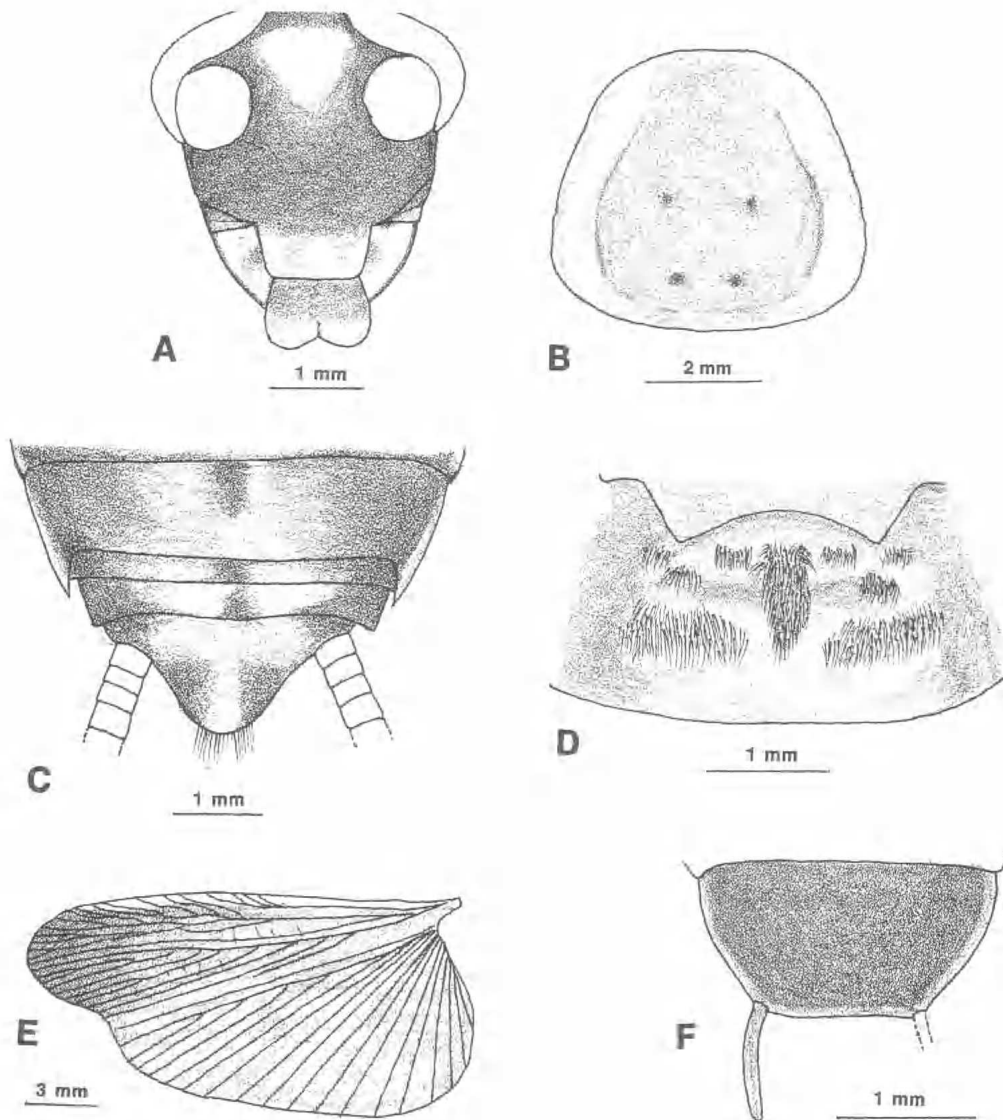


FIG. 3. *Macrocerca hopensis* sp.nov., ♂ holotype. A, head; B, pronotum; C, abdominal terga 7-10 (supraanal plate); D, setal gland on first abdominal tergum; E, hind wing; F, subgenital plate (ventral; left style broken).

small distal region of the proximal costal veins white, distal part of the anterior field brownish yellow, posterior field colourless. Abdominal terga brown with wide lateral regions slightly darker. Abdominal sterna with the last three segments brown, the more anterior segments mostly black with some small lighter brown lateral spots. Cerci brown, dorsal surface somewhat lighter. Legs brown.

Measurements. Length, 18.2; pronotum length x width, 4.7 x 5.0; tegmen length, 19.0; interocular width, 0.8.

***Macrocerca hopensis* sp.nov.**
(Fig. 3)

MATERIAL EXAMINED

HOLOTYPE: ♂, 14km W by N of Hope Vale mission,

nr Cooktown, Queensland, 15°16'S 144° 59'E, 7-10.v.1981, D.C.F. Rentz, Stop 34, ANIC.

ETYMOLOGY

For the Hope Vale mission.

DESCRIPTION

Male. Interocular space less than the distance between antennal sockets (Fig. 3A). Pronotum suboval slightly wider than long (Fig. 3B). Tegmina and wings fully developed extending beyond the abdomen, the former with longitudinal and oblique discoidal sectors. Hind wing with branched media vein, cubitus vein with 6 or 7 complete (some of them forked 1 or more times), and 1 incomplete branches, apical triangle absent (Fig. 3E). Front femur with a row of minute setae, some of them of the same length but shorter and finer than spinules, with 2 large terminal spines; very few or no large spines on the ventral surfaces of the mid and hind femora; large pulvilli on 4 proximal tarsomeres, tarsal claws simple, strongly asymmetrical, arolia well developed, as large as the smaller claw. First abdominal tergum specialized with a dense longitudinal group of setae medially and 4 setal groups of various sizes on either side of the middle one (Fig. 3D). Posterolateral corner of the seventh abdominal tergum acutely produced, supraanal plate trigonal, apex rounded (Fig. 3C). Cerci about 4 times longer than the supraanal plate. Subgenital plate almost symmetrical, styles elongated, slender, sclerotized (the left one is missing but probably is similar to the intact one), interstyler margin straight (Fig. 3F). Genital phallobes protrude from under the supraanal plate and the hook curves from the left side with its blunt apex reaching the right phallobere.

Female. Unknown.

Colour. Occiput and vertex of head black, with a white inverted trigonal macula between the eyes and upper half of the antennal sockets, the face down to the clypeus and mandibles blackish with some reddish tint, mandibles mostly pale yellowish, clypeus light reddish, labrum reddish brown, the distal region yellowish (Fig. 3A). Pronotal disk reddish brown with 4 small, weak dots on the distal half, lateral border regions subhyaline, the margin area white (Fig. 3B). Tegmina reddish brown, the subcostal and most of the costal vein regions white, radial vein dark. Hind wing with subcostal region and distal parts of some of the proximal costal veins white, the distal region of the anterior field dark brown, the remainder with a yellowish tinge, posterior field

pale (Fig. 3E). Abdominal terga with a brown medial longitudinal stripe, lighter brown on either side of it and with broader dark brown in the lateral zones (Fig. 3C). Abdominal sterna completely black. Cerci reddish dorsally, dark brown ventrally. Legs with coxae and tibiae dark brown, femora blackish brown, tarsi lighter brown.

Measurements. Length, 21.0; pronotum length x width, 4.8 x 5.0; tegmen length, 20.5; interocular width, 0.6.

Periplaneta Burmeister

Princis (1966: 405; 1971: 1145) catalogued 47 species of *Periplaneta* world wide and Asahina (1980: 103) added 2 new species and 3 new combinations. Princis (1966: 446) included *Periplaneta basedowi* Tepper from South Australia but that species belongs in *Ataxigamia* (Rentz & Cameron, 1983:7). Mackerras (1968: 560) listed the following 5 species of Blattinae, all introduced into Australia and circumtropical domiciliary pests, although some may be found outdoors: *P. americana* (Linnaeus), *P. australasiae* (Fabricius) (both widespread in towns in tropical and subtropical parts of Queensland), *P. brunnea* (Burmeister) (= *P. ignota* Shaw) (Queensland), *Blatta orientalis* Linnaeus (South Australia), *Neostylopyga rhombifolia* (Stoll) (Northern Territory). Mackerras (1968: 560) provided a key to distinguish these species, and Peck & Roth (1992: 2204, fig. 2A-L) did the same for 3 species of *Periplaneta*. I have also examined a specimen of another circumtropical domiciliary pest, *Periplaneta fuliginosa* (Serville) from Iron Range.

Dr G. B. Monteith sent me 5 specimens of a *Periplaneta* that occurs in a natural rainforest at Iron Range in northern Queensland, and which I describe below as new. I am also including some Australian records of 4 other domiciliary species of *Periplaneta*.

Periplaneta americana (Linnaeus)

MATERIAL EXAMINED

Queensland, ANIC: Green Is., 28kms NE of Cairns, Qld, 1♂, 1♀, 1.iv.1988, D.C.F. Rentz, Stop A-38.

Periplaneta brunnea (Burmeister)

MATERIAL EXAMINED

Northern Territory, ANIC: Flying Boat Base, Groote Eylandt, 1♀, ix.1940. Queensland, ANIC: Roma District, 1♀.

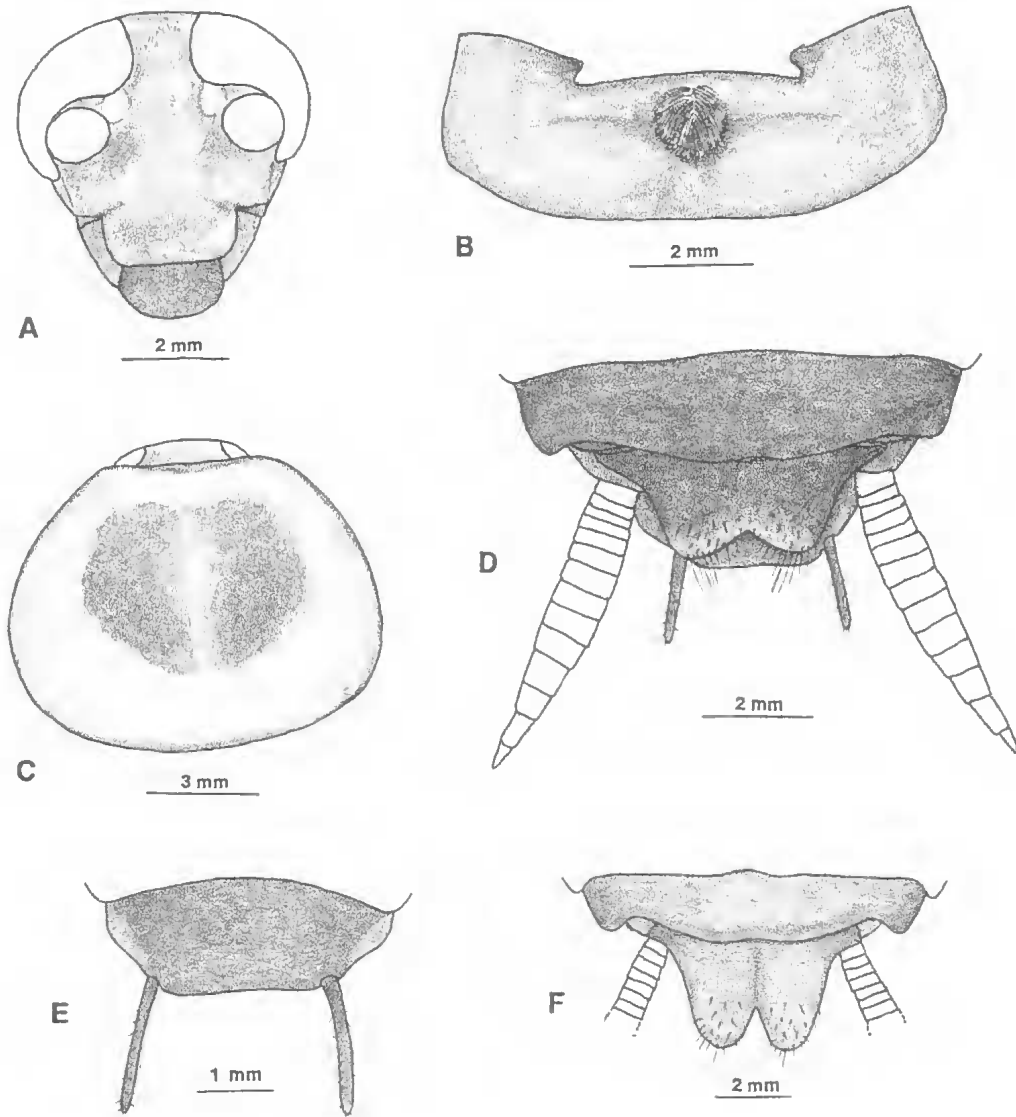


FIG. 4. *Periplaneta aboriginea* sp.nov. A-E, ♂ holotype; F, ♀ paratype from Gordon's Mine Area. A, head; B, setal gland on first abdominal tergum; C, pronotum; D, terminal abdominal segments (dorsal); E, subgenital plate (ventral); F, terminal abdominal terga.

REMARKS

Both females have slightly reduced tegmina and wings that only reach to the end of the abdomen.

Periplaneta fuliginosa (Serville)

MATERIAL EXAMINED

New South Wales, ANIC: Sydney (Greenacre), 1 ♂, H.M. Cameron, (Revesby), 1 ♀. x.1984-i.1985, L.V. Barnet.

***Periplaneta australasiae* (Fabricius)**

MATERIAL EXAMINED

Queensland, ANIC: Mt Carbine, 2♂♂, 1♀, 5.v.1945, T.W. Gamble; Foleyvale, Aboriginal Res., 4♂♂, 10-25.i.1988, 2♂♂, 20-25.i.1968, G. Hangay; Atherton (CSIRO Labs), 17°17'S 145°29'E, 1♂, 3.iii.1988, 1♀, 20.iii.1988, 1♀, 22.iii.1988, D.C.F. Rentz, Stop A-1; Green Island, 28km NE of Cairns, Qd, 16°46'S 145°59'E, 1♂, 1.iv.1988, D.C.F. Rentz, Stop A-38; Heron I., 84km SW by W of Gladstone, 23°26'S 151°55'E, 1♂, 1♀, 15-19.vii.1983, D.C.F. & B.G.F. Rentz, Stop 32, New South Wales. ANIC: Durras North, nr Batemans Bay, 1♀, iv.1981, H.M. Cameron.

***Periplaneta aboriginea* sp.nov.**
(Fig. 4)

MATERIAL EXAMINED

HOLOTYPE: ♂, ABRS area 2, 142°45'E 11°40'S, Dividing Range, Cape York Pen., NQ [Queensland], 5-12.ii.1976, G.B. Monteith, QMBA.

PARATYPES: Queensland. QMBA: Coll. G.B. Monteith: Gordon's Mine Area, Iron Range, NQ, rainforest, 1♀, 12-18.ii.1976; Dividing Range, 15km W of Captain Billy Creek, Cape York Pen., NQ, 142°45'E, 18°40'S, 1♀ (in very poor condition), 4-9.vii.1975; Mt Tozer, Iron Range, NQ, 1-1500', 1♀, 30.iv.1973; Iron Range, Cape York, Pen., NQ, 1♂, 30.vi.-4.vii.1977 (retained in MCZ).

DESCRIPTION

Male. Head with interocular space less than the distance between antennal sockets (Fig. 4A). Pronotum suboval, widest near the middle (Fig. 4C). Tegmina and wings fully developed extending beyond end of abdomen. Anteroventral margin of front femur with 15-18 stout spines that decrease slightly in length distad, the 2 or 3 terminal spines longer; posteroventral margin with 4 spines; ventral margins of mid and hind legs with 6-8 large spines; small apical pulvilli on 4 proximal tarsomeres, tarsal claws simple, symmetrical, arolia small. First abdominal tergum with a large, dense group of setae anteromedially (Fig. 4B). Supraanal plate not membranous, hind margin with a broad, shallow, V-shaped excavation forming a pair of apically rounded lobes that reach the hind margin of the supraanal plate, their distal halves with long slender setae (Fig. 4D); subgenital plate transverse, styles slender, similar, almost equal to the length of the plate, interstylar margin truncate (Fig. 4E), Cerci slender, dorsally flattened, almost 3 times the length of the supraanal plate (Fig. 4D).

Colour. Head yellowish brown, labrum, maxillary and labial palpi reddish brown; antennae brown. Pronotum with a reddish brown blotch, lighter mediolongitudinally, and surrounded by yellowish (Fig. 4C). Tegmina dark reddish brown. Hind wing with anterior field yellowish brown, darker along the costal vein area. Proximal 4 abdominal terga yellowish brown, the remaining segments dark brown, with the distal region of the supraanal plate lighter brown (Fig. 4D). Abdominal sterna uniformly reddish brown, or with some segments darker on their distal halves. Cerci and legs reddish brown.

Female. Supraanal plate not membranous, hind margin with a narrow V-shaped excision (Fig. 4F), the rounded apexes of the lobes reach the tips of the subgenital plate valves which can be seen in dorsal view between the excision. Colour essentially similar to that of the male.

Measurements (♀ in parentheses). Length, 31.5-35.2 (34.0-40.0); pronotum length x width, 8.1-9.0 x 10.4-11.6 (9.0-9.5 x 12.2-12.6); tegmen length, 33.1-36.4 (34.5-?); interocular width, 1.1-1.3 (1.5-1.6).

REMARKS

The habitus of this species resembles that of *P. americana* but the male has a large tergal gland on the first abdominal segment and its supraanal plate differs; the male American cockroach lacks a tergal gland, its supraanal plate is membranous and differently shaped (cf. Fig. 4D with fig. 2E in Peck & Roth, 1992).

Incertae sedis**?*Periplaneta australis* (MacLeay, 1827)**

Blatta australis MacLeay, 1827: 454 (male).

?*Periplaneta australis* (MacLeay): Kirby, 1904: 142; Shelford, 1910: 19; Princis, 1966: 456.

HOLOTYPE

♂, N. Australia (not examined).

REMARKS

According to the Curator of the MacLeay Museum, the type of *Blatta australis* is not in that museum (G. B. Monteith, pers. comm.).

As earlier workers have indicated, it is impossible to place this species based on the description given by Macleay (1827) which did not even suggest its size.

ACKNOWLEDGEMENTS

I thank Dr D.C.F. Rentz of CSIRO and Dr G.B. Monteith of the Queensland Museum for sending me specimens. I am grateful to the Australian Biological Resources Study (ABRS) for partial support.

LITERATURE CITED

- ASAHINA, S. 1980. Taxonomic notes on non-domiciliary *Periplaneta* species from the Ryukyus, Taiwan, Hong Kong and Thailand. *Japanese Journal of Sanitary Zoology* 31: 103-115.
- KIRBY, W. 1904. 'A synonymic catalogue of Orthoptera'. Vol. 1. (British Museum (Natural History): London).
- MACKERRAS, M.J. 1968. Australian Blattidae (Blattodea). IX. Revision of Polyzosteriinae, and Blattinae. *Australian Journal of Zoology* 16: 511-575.
- MACLEAY, W.S. 1827. Catalogue of insects, collected by Captain King, R.N. Pp. 438-469. In King, P.P. (ed.), 'Narrative of a survey of the intertropical and western coasts of Australia. Performed between the years 1818 and 1822'. Vol. II. (John Murray: London).
- PECK, S. & ROTH, L.M. 1992. Cockroaches of the Galápagos Islands, Ecuador, with descriptions of three new species (Insecta: Blattodea). *Canadian Journal of Zoology* 70: 2202-2217.
- PRINCIS, K. 1966. Blattariae, Suborder Blattoidea, Fam.: Blattidae, Nocticolidae. Pp. 403-614. In Beier, M. (ed.), 'Orthopterorum catalogus'. Pt. 8. (W. Junk: s'-Gravenhage).
1971. Blattariae, Suborder Epilamproidea, Fam.: Ectobiidae. Pp. 1041-1224. In Beier, M. (ed.), 'Orthopterorum catalogus'. Pt. 14. (W. Junk: s'-Gravenhage).
- RENTZ, D.C.F. & CAMERON, H.M. 1983. Catalogue of Australian cockroaches. CSIRO, Division of Entomology Technical Papers 21: 1-37.
- ROTH, L.M. 1968. Oothecae of the Blattaria. *Annals of the Entomological Society of America* 61: 83-111.
1993. The genus *Macrocerca* Hanitsch with descriptions of new species (Blattidae: Macrocercinac, subfam. n.). *Entomologica Scandinavica* 24: 343-360.
- SHELFORD, R. 1910. Orthoptera. Fam. Blattidae, Subfamily Blattinae (=Periplanctinae). *Genera Insectorum* 109: 1-27.